71. The method of claim 69 further comprising:

repeating said acts of fanning out with a plurality of portions of each of said stages.

72. The method of claim 69 further comprising:

recursively performing said act of fanning out.

73. The method of claim 69 wherein:

a remaining stage immediately following said initial stage comprises internal links that are at least $x$ times the total number of inlet links of said initial stage.

74. The method of claim 69 wherein:

said initial stage comprises a plurality of first switches, and plurality of inlet links connected to each said first switch; and

a remaining stage immediately following said intial stage comprises a plurality of second switches that are at least $x$ times the number of inlet links of each first switch and each second switch comprises a plurality of first internal links at least equal in number to the number of first switches in said initial stage.

75. A network comprising:

an input stage comprising $N_1$ or $n_1 * r_1$ inlet links and $r_1$ input switches and $n_1$ inlet links for each of said $r_1$ input switches, and $N_1 = n_1 * r_1$, said $n_1$ inlet links for receiving connection connections;

an output stage comprising $N_2$ or $n_2 * r_2$ outlet links and $r_2$ output switches and $n_2$ outlet links for each of said $r_2$ output switches, and $N_2 = n_2 * r_2$, said $n_2$ outlet links for transmitting said received connections; and

a middle stage having $m$ middle switches, and each middle switch has at least one link connected to each input switch for a total of at least $r_1$ first internal links and each middle switch further comprising at least one link connected to at most $d$ said output switches for a total of at least $d$ second internal links, wherein $1 \leq d \leq r_2$ ,

said initial stage having multicast connections with a fan-out of at most $x$, for $x \geq 2$.

76. The network of claim 75 further comprising:

said multicast connections having a fan-out of one or more in said middle stage.

77. The network of claim 75 further comprising:

said multicast connections having a fan-out of one or more in said output stage.

78. A network having a plurality of multicast connections, said network comprising:

an input stage comprising $r_1$ input switches and $n_1$ inlet links for each of said $r_1$ input switches, and $N_1 = n_1 * r_1$;

an output stage comprising $r_2$ output switches and $n_2$ outlet links for each of said $r_2$ output switches, and $N_2 = n_2 * r_2$; and

a middle stage comprising $m$ middle switches, and each middle switch comprising at least one link connected to each input switch for a total of at least $r_1$ first internal links; each middle switch further comprising at least one link connected to each output switch for a total of at least $r_2$ second internal links;

wherein $m \geq \sum_{i=1}^{P}(x_i * a_i + n_1 - 1)$, where $\sum_{i=1}^{P} a_i = n_1 + n_2$ and $x_1, x_2, ..., x_p \geq 1$;

wherein, for $1 \leq i \leq p$, multicast connections from $a_i$ inlet links of each input switch pass through at most $x_i$ middles switches.

79. The network of claim 78, where $x_1, x_2, ..., x_p \geq 2$,

further is capable of setting up said connection by never changing path of a previously set up multicast connection, and the network is hereinafter "strictly nonblocking network".

80. The network of claim 78 comprising a controller in communication with said input, output and middle stages to set up said multicast connection.

81. The network of claim 78 wherein said $r_1$ input switches and $r_2$ output switches are the same number of switches.

82. The network of claim 78 wherein said $n_1$ inlet links and $n_2$ outlet links are the same number of links and $n_1 = n_2 = n$.

83. The strictly nonblocking network of claim 79,

wherein each of said input switches, or each of said output switches, or each of said middle switches further recursively comprise one or more strictly nonblocking networks.

84. The network of claim 78,

wherein each of said input switches, or each of said output switches, or each of said middle switches further recursively comprise one or more networks.

85. A network having a plurality of multicast connections, said network comprising:

an input stage comprising $r_1$ input switches and $n_1$ inlet links for each of said $r_1$ input switches, and $N_1 = n_1 * r_1$;

an output stage comprising $r_2$ output switches and $n_2$ outlet links for each of said $r_2$ output switches, and $N_2 = n_2 * r_2$; and

a middle stage comprising $m$ middle switches, and each middle switch comprising at least one link connected to each input switch for a total of at least $r_1$ first internal links; each middle switch further comprising at least one link connected to at most d said output switches for a total of at least d second internal links, wherein $1 \le d \le r_2$ ,

wherein each multicast connection from an inlet link passes through at most one or two middles switches, and said multicast connection further passes a plurality of outlet links from said at most two middle switches.

86. The network of claim 85, wherein $m \ge 2 * n_1 + n_2 - 1$,